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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/274,014	03/22/1999	NICOLAS VOUTE	9676-286	7857

7590

04/03/2002

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EXAMINER

SORKIN, DAVID L

ART UNIT	PAPER NUMBER
1723	22

DATE MAILED: 04/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/274,014	VOUTE ET AL.	
	Examiner	Art Unit	
	David L. Sorkin	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-66 is/are pending in the application.
- 4a) Of the above claim(s) 23-58 and 64-66 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 59-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Prosecution Application

1. The request filed on 19 November 2001 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/274,014 is acceptable and a CPA has been established. An action on the CPA follows.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-10, 13-22 and 59-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carr et al. (US 5,015,373). Regarding claim 1, Carr ('373) discloses dense mineral oxide solid supports comprising a mineral oxide matrix (see col. 4, lines 36-40) having an external surface and pores and an interactive polymer network which is crosslinked inside the pores and on the surface of matrix (see col. 8 line 38 to col. 9 line 54, especially col. 9, 43-44, "...the oligomer solution has infiltrated substantially all of the pores". The remaining claim limitation "wherein the pores have a pore volume which is less than 30% of the total volume of the mineral oxide matrix" is not explicitly disclosed, although a specific example of 31% is disclosed (see Table I). Porosity (which is pore volume as a percent of total volume) is recognized as a parameter to be optimized (see col. 13, lines 35-43). Therefore, it is considered that it would have been obvious to one of ordinary skill in the art to have discovered an optimal or workable

range of porosity. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 105 USPQ 233, 235 (CCPA 1955). In additional support of a finding of obviousness, the value of 31% porosity occurs at a temperature of firing temperature of 900 degrees C, Carr ('373) recognizes that porosity increases with increasing temperature, and Carr ('373) discloses that "[o]nce the ZrO₂ particles are condensed into spherules by one of the above processes, thermal treatment at firing temperatures from about 100-1500 degrees C, preferable 400-1100 degrees C, is performed" (col. 8, lines 20-24). Applicant presents arguments that the porosity limitation would not have been obvious. Firstly, it is argued that because Carr ('373) discloses that two variables, temperature and colloid size, influence porosity (in a particular method of making disclosed by Carr), the claimed limitation would not have been obvious. However, in *In re Aller*, 220 105 USPQ 233, 235 (CCPA 1955), it was held that a claim to a process performed at 40-80 degrees C and an acid concentration of 25-70% was obvious over a reference disclosing 100 degrees and an acid concentration of 10%. Thusly, in *Aller*, a finding of obviousness was made even though two claimed variables were outside the disclosed range. It is further noted that in the instant case, according to page 10, lines 22 to 24 of the instant specification, the firing temperature ("about 900-1500 degrees C, and preferably between 1000 and 1400 degrees C") is *within* the range disclosed by the reference (100-1500 degrees C, preferable 400-1100 degrees C). It must also be kept in mind that only *one* parameter is being claimed in the instant limitation, porosity. It is noted that applicant's statement

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on line 2 of page 4 of paper No. 21 "to increase surface area (as a result of the higher firing temperature)" is flawed, because Table I of Carr ('353) clearly shows that surface area *decreases* as a result of increasing firing temperature. Secondly, applicant argues that Carr ('353) teaches away from low porosities. The examiner is not aware of any such teaching away. Applicant emphasizes that Carr ('373) states "the appropriate firing temperature is selected"; however, this does not appear to the examiner to be a statement of any desired porosity level. Applicant also cites the example of Carr ('373) col. 14, lines 4-5, "[l]arger colloids produce fired spherules with larger pore diameters and pore volumes" as teaching away from low porosity, however, the examiner considers that this is merely a recognition of a trend, not a teaching of an actual desire to increase the pore volume, just as the statement in col. 13 lines 37-39 "pore volume decrease[s] with increasing firing temperature" is not a teaching of an actual desire to decrease the pore volume. Applicant is generally referred to *In re Geisler*, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997) regarding the concept of "teaching away", where a claimed range of "50-100 Angstroms" was held to be obvious over a patent which included the statement "should not be less than about 100 angstroms". Applicant also remarks that "[t]his low pore volume is essential to firmly anchor the interactive polymer network" in applicant's invention. However, there are reasons to consider that this is not the case. Firstly, while the instant claims recite "less than 30%", in multiple occurrences in the instant specification, "about 30%" is recited, suggesting that there is nothing essential about exactly 30% or less. Furthermore, the prior art discloses 31%, which is about 30%. Secondly, the instant specification states "the pore volume is left just large

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enough to allow polymers to be rooted in the pores" (page 9, lines 31-32), wherein the phrase "just large enough" implies that there is some critical point where pore volume would be too *small*, exactly the opposite of what applicant is now arguing. Regarding claim 2, Carr et al. fails to explicitly disclose a density of 1.7-11, however because the supports of Carr et al. are zirconium oxide (see col. 13), it is considered that the density would intrinsically be in this range if the porosity is less than <30%, because zero porosity zirconium oxide has a density of 5.9. Regarding claim 3, Carr et al. ('373) fails to explicitly disclose a density of 2.1-10, however because the supports of Carr et al. ('373) are zirconium oxide (see col. 13), it is considered that the density would intrinsically be in this range if the porosity is less than <30%, because zero porosity zirconium oxide has a density of 5.9. Regarding claim 4, the supports are in the 5-500 micron range (col. 4, lines 40-45). Regarding claim 5, the supports are in the 5-500 micron range (col. 4, lines 40-45). Regarding claims 7 and 8, it is considered that it would have been obvious to discover an optimum or workable range for porosity for the reasons discussed above with regard to claim 1. Regarding claim 9, the supports comprise zirconia (see col. 13). Regarding claim 10, the polymer network comprises a soluble organic polymer crosslinked in place with the mineral oxide matrix (see col. 27, lines 1-50). Regarding claim 13, the polymer is disclosed to be polyvinyl alcohol (col. 8, lines 60-68). Regarding claim 14, the polymer network comprises monomers copolymerized in place with the mineral oxide matrix (col. 8, lines 59-68). Regarding claims 15-22, the monomers include vinylpyrrolidone (col. 65). (Note: the monomer being vinylpyrrolidone is within the claim boundary of each of claims 15-22). Regarding

claim 59, the supports are in the 5-500 micron range (col. 4, lines 40-45). Regarding claim 6, Carr et al. ('373) discloses dense mineral oxide solid supports comprising a mineral oxide matrix (see col. 4, lines 36-40) having an external surface and pores and an interactive polymer network which is crosslinked inside the pores and on the surface of matrix (see col. 8 line 38 to col. 9 line 54, especially col. 9, 43-44, "...the oligmer solution has infiltrated substantially all of the pores". The supports are in the 10-100 micron range (col. 4, lines 40-45). Carr et al. ('373) fails to explicitly disclose a density of 2.1-11, however because the supports of Carr et al. ('373) are zirconium oxide (see col. 13), it is considered that the density would intrinsically be in this range if the porosity is less than <30%, because zero porosity zirconium oxide has a density of 5.9. The remaining claim limitation "wherein the pores have a pore volume which is less than 30% of the total volume of the mineral oxide matrix" is not explicitly disclosed, although a specific example of 31% is disclosed (see Table I). Porosity (which is pore volume as a percent of total volume) is recognized as a parameter to be optimized (see col. 13, lines 35-43). Therefore, it is considered that it would have been obvious to one of ordinary skill in the art to have discovered an optimal or workable range of porosity. See discussion of claim 1 above for a more thorough explanation of this obvious finding. Regarding claim 60, it is considered that it would have been obvious to discover an optimum or workable range for porosity for the reasons discussed above. Regarding claim 61, the supports comprise zirconia (see col. 13). Regarding the polymer network comprises a soluble organic polymer crosslinked in place with the mineral oxide matrix

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(see col. 27, lines 1-50). Regarding claim 63 the polymer network comprises monomers copolymerized in place with the mineral oxide matrix (col. 8, lines 59-68).

4. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carr et al. ('373) in view of Girot et al. (US 5,445,732). The supports of Carr et al. ('373) are discussed above with respect to claim 10. The soluble organic polymer fails to be a polysaccharide. Girot et al. ('732) teaches polysaccharides including cellulose derivatives (col. 17, lines 2-3). It is considered that it would have been obvious to one of ordinary skill in the art to have utilized a polysaccharide, and specifically a cellulose derivative, as the polymer of Carr et al. ('373), because Girot et al. ('732) also uses the polymers to coat inorganic matrices (col. 5), and Carr et al. ('373) discloses the use of many alternative polymers (col. 8, lines 59-68).

Response to Arguments


5. Applicant's arguments filed have been fully addressed above in the detained discussion of claim 1.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 703-308-1121. The examiner can normally be reached on 8:00 -5:30 Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



David Sorkin

March 28, 2002


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SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700